03/06/14 Agenda

- Warm Up

- Review Homework
    - Worksheet 7.1 day 2 - Negative & Zero Exponents

- Section 7.5 day 1 - Rational Exponents & Radicals

Warm Up - Homework out!

Put your name on a slip of paper.

Simplify:

$4ab^0 = 4a$

$\dfrac{3^{-2}}{n} = \dfrac{1}{3^2 n} = \dfrac{1}{9n}$

$\dfrac{1}{c^{-1}} = \dfrac{1 \cdot c^1}{1} = c$

$\dfrac{6a^{-1}c^{-3}}{d^0}$

$\dfrac{6a^{-1}c^{-3}}{1a^1c^3} = \dfrac{6}{ac^3}$

Section 7.5 day 1 - Rational Exponents & Radicals

Target 7A March 6, 2014

Review:

$$a^m a^n = a^{m+n} \qquad \frac{a^m}{a^n} = a^{m-n}$$

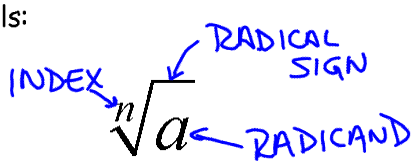
$$\left(a^m\right)^n = a^{mn}$$

$$(ab)^m = a^m b^m \qquad \left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$$

$$a^0 = 1 \qquad a^{-n} = \frac{1}{a^n} \qquad \frac{1}{a^{-n}} = a^n$$

Definitions:

Radicals:



The index gives the 'degree' of the root.

For a cube root, the degree is 3 $\sqrt[3]{x}$

When no index is written, assume the index is 2.

This is usually called the SQUARE ROOT.

$5^2 = 25 \qquad \sqrt{25} = \sqrt{5 \cdot 5} = 5$

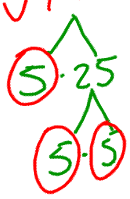
$25^{\frac{1}{2}} = 5$

$\sqrt[2]{25} = 25^{\frac{1}{2}} = 5$

$\sqrt[3]{8} = 8^{\frac{1}{3}} \qquad 625^{\frac{1}{4}} = \sqrt[4]{625}$

There are 2 ways to simplify: $\sqrt[3]{5^3}$ $\qquad$ $\sqrt[4]{2^4}$

1.) $\sqrt[3]{125} = \sqrt[3]{5 \cdot 5 \cdot 5} = 5$



2) $\sqrt[4]{16} = 16^{\frac{1}{4}} = (2 \cdot 2 \cdot 2 \cdot 2)^{\frac{1}{4}} = 2$

Section 7.5 day 1 - Rational Exponents & Radicals

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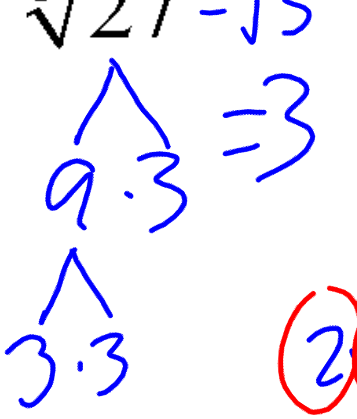
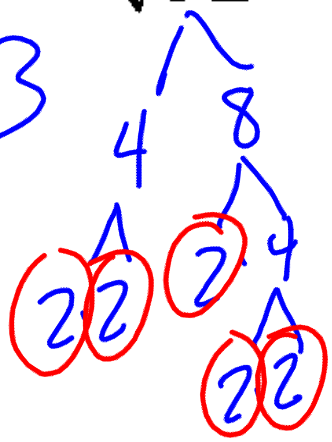
You try:

$\sqrt[3]{27} = \sqrt[3]{3^3} = 3$



$\sqrt[5]{32} = 2$



$\sqrt[3]{64} = 4$

$\sqrt[2]{36}$

Section 7.5 day 1 - Rational Exponents & Radicals

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You can also write rational expressions like $\frac{2}{3}$ in radical form.

$$8^{\frac{2}{3}} = 8^{2\cdot\frac{1}{3}} = \left(8^2\right)^{\frac{1}{3}} = \sqrt[3]{8^2}$$

$$\hookrightarrow 8^{\frac{1}{3}\cdot 2} = \left(8^{\frac{1}{3}}\right)^2 = \left(\sqrt[3]{8}\right)^2$$

YOU CAN ALSO WRITE RATIONAL EXPRESSIONS LIKE $\frac{2}{3}$ IN RADICAL FORM

$$8^{\frac{2}{3}} = 8^{\frac{1}{3}\cdot 2} = \left(8^{\frac{1}{3}}\right)^2 = \left(\sqrt[3]{8}\right)^2$$

$$8^{2\cdot\frac{1}{3}} = \left(8^2\right)^{\frac{1}{3}} = \sqrt[3]{8^2}$$

$$8^{\frac{2}{3}} = \sqrt[3]{8^2} = \left(\sqrt[3]{8}\right)^2$$

$$a^{\frac{1}{n}} = \sqrt[n]{a} \quad \text{AND}$$

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = \left(\sqrt[n]{a}\right)^m$$

$\sqrt{16} = 4 \Rightarrow 4^2 = 16$ $\sqrt{-16}$

$\sqrt[3]{8} = 8^{\frac{1}{3}} = 2$

$\sqrt[3]{-8} = -2$

$\sqrt[3]{-8} = -2$

$(-2)^3 = (-2)(-2)(-2)$

$4(-2)$

-8

$8^x = 64$ $\sqrt[x]{64} = 8$

$5^x = 625$ $\sqrt[x]{625} = 5$

$\sqrt{20} = \sqrt{2 \cdot 2 \cdot 5}$

$2\sqrt{5}$

$\sqrt{36}$

$\sqrt{36}$

$4 \quad 9$

$2 \cdot 2 \quad 3 \cdot 3$

$\sqrt{36} = \sqrt{2 \cdot 2 \cdot 3 \cdot 3}$

$2\sqrt{3 \cdot 3}$

$2 \cdot 3 = 6$